

Moenck, R. T.

Fast computation of GCDs. (English) [Zbl 0306.68027](#)

STOC '73, Proc. 5th ann. ACM Symp. Theor. Comput., Austin 1973, 142-151 (1973).

Summary: An integer greatest common divisor (GCD) algorithm due to Schönhage is generalized to hold in all Euclidean domains which possess a fast multiplication algorithm. It is shown that if two N precision elements can be multiplied in $O(N \log^a N)$, then their GCD can be computed in $O(N \log^{a+1} N)$. As a consequence, a new faster algorithm for multivariate polynomial GCD's can be derived and with that new bounds for rational function manipulation.

For a scan of this review see the [web version](#).

MSC:

[68Q25](#) Analysis of algorithms and problem complexity
[68W30](#) Symbolic computation and algebraic computation
[11Y16](#) Number-theoretic algorithms; complexity

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